USB Type-C ENGINEERING CHANGE NOTICE

Title: Clarify VCONN requirements for passive cables
Applied to: USB Type-C Specification Release 2.0, August 19, 2019

Brief description of the functional changes proposed:
The USB PD specification defines the Cable Termination Type field in the Passive Cable VDO. When this field is set to 01b, the passive cable is indicating that it wants Vconn to power some internal function. From the PD perspective the cable is advertising a capability. The USB Type-C spec in Table 4-4 defines when VCONN is actually required. This ECR makes clear that 'if not otherwise required' means to follow the cable's requirement as expressed in the Cable Type Termination field.

Benefits as a result of the proposed changes:
Closes a hole in the spec.

An assessment of the impact to the existing revision and systems that currently conform to the USB specification:
Will impact chargers that arbitrarily turn off VCONN after reading the eMarker without considering the value in the Cable Termination Type field.

An analysis of the hardware implications:
A source that already provides VCONN may need to update its logic with respect to turning off VCONN after reading the eMarker to consider the value in the Cable Termination Type field.

An analysis of the software implications:
None

An analysis of the compliance testing implications:
Will require an additional test for Sources that supply VCONN to verify that they respect the passive cable's desire for VCONN as indicated in the Cable Termination Type field.

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Actual Change Requested

(a). Table 4-4
From Text:

Table 4-4 USB Type-C Source Port's VCONN Requirements Summary

D+/D–	TX/RX, VPD	> 3 A	VCONN Requirements
No	No	No	Not required to source VCONN
Yes	No	No	Not required to source VCONN
Yes	Yes	No	Required to source 1 W for x1 implementations and 1.5 W for x2 implementations. If not otherwise required, VCONN power may be removed after the source has read the cable's eMarker and has determined that it is not an active cable nor a VPD.
No	No	Yes	Required to source 100 mW. If not otherwise required, VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity.
Yes	No	Yes	Required to source 100 mW. If not otherwise required, VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity.
Yes	Yes	Yes	Required to source 1 W for x1 implementations and 1.5 W for x2 implementations. If not otherwise required, VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity and that it is not an active cable nor a VPD.

To Text:

Table 4-4 USB Type-C Source Port's VCONN Requirements Summary

D+/D–	TX/RX, VPD	> 3 A	VCONN Requirements
No	No	No	Not required to source VCONN
Yes	No	No	Not required to source VCONN
Yes	Yes	No	Required to source 1 W for x1 implementations and 1.5 W for x2 implementations. If after reading the cable's eMarker the Source has determined the cable is not a VPD and the Cable Termination Type field is 00b ~~not otherwise required~~, it may remove VCONN power ~~may be removed after the source has read the cable's eMarker and has determined that it is not an active cable nor a VPD~~.
No	No	Yes	Required to source 100 mW. ~~If not otherwise required,~~ VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity.
Yes	No	Yes	Required to source 100 mW. ~~If not otherwise required,~~ VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity.
Yes	Yes	Yes	Required to source 1 W for x1 implementations and 1.5 W for x2 implementations. If after reading the cable's eMarker and the Source has determined the cable's current carrying capacity and the cable is not a VPD and the Cable Termination Type field is 00b, it may remove VCONN power. ~~If not otherwise required, VCONN power may be removed after the source has read the cable's eMarker and has determined the cable's current carrying capacity and that it is not an active cable nor a VPD.~~